

SVKM's
D. J. Sanghvi College of Engineering

**Program: B.Tech in Production
Engineering**

Academic Year: 2022

Duration: 3 hours

Date: 11.01.2023

Time: 10:30 am to 01:30 pm

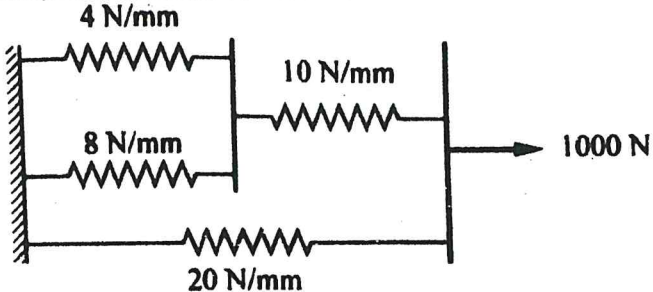
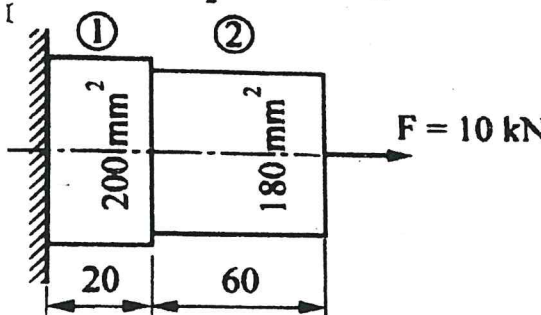
Subject: Computer Aided Engineering (Semester VII)

Marks: 75

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.

- (1) This question paper contains two pages.
- (2) **All Questions are Compulsory.**
- (3) All questions carry equal marks.
- (4) **Answer to each new question is to be started on a fresh page.**
- (5) **Figures in the brackets on the right indicate full marks.**
- (6) **Assume suitable data wherever required, but justify it.**
- (7) Draw the neat labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q1 (a)	Explain the Input & out devices in CAD :	[05]
Q1 (b)	A triangle formed by three points A,B and C whose coordinates are A(50,40), B(100,60), C(70,80). Calculate the new coordinates if the triangle is reduced in size using the scale factor $S_x=0.5$, $S_y=0.7$ and base point is A. OR A triangle ABC with vertices A(32,22), B(88,20) AND C(32,82) is to be scaled by factor of 0.6 about a point X(50,42) Determine: I. The composite transformation matrix and II. The coordinates of the vertices for the scaled triangle.	[10] [10]
Q2 (a)	Explain Constructive solid geometry.	[05]
Q2 (b)	A figure shows a cluster of four springs. One end of assembly is fixed and force of 1000 N is applied at the end. Using the Finite element method, determine: Deflection of each spring and reaction forces at the support.	[10]

	 <p style="text-align: center;">OR</p> <p>Explain the steps in FEA in details with example.</p>	[10]
Q3 (a)	Explain Automated storage/ Retrieval system (AS/RS)	[05]
Q3 (b)	<p>Explain Nature and role of the elements of CIM in detail.</p> <p style="text-align: center;">OR</p> <p>A stepped bar is made of two materials joined together as shown in figure. The bar is subjected to an axial pull of 10 kN. Determine the displacement at each section and reaction force.</p> <p style="text-align: right; color: blue;">$E = 2 \times 10^5 \text{ N/mm}^2$</p> 	[10] [10]
Q4 (a)	Explain Surface Modelling.	[05]
Q4 (b)	Explain Group Technology.	[10]
Q5 (a)	Explain Boundary representation Modelling.	[05]
Q5 (b)	Explain in Detail IGES file format.	[10]